CLAIMS

1. The use of a pharmaceutically acceptable cholinesterase inhibitor or a pro-drug therefor in the manufacture of a medicament for combatting attention deficit disorders.

2. The use is claimed in claim 1 wherein the disorder is attention deficit hyperactivity disorder.

3. The use as claimed in claim 1 wherein the disorder is a hyperkinetic disorder.

4. The use as claimed in any one of the preceding claims wherein the cholinesterase inhibitor is an acetyl cholinesterase inhibitor.

5. The use as claimed in any one of the preceding claims wherein the cholinesterase inhibitor is active substantially selectively at nicotinic receptor sites.

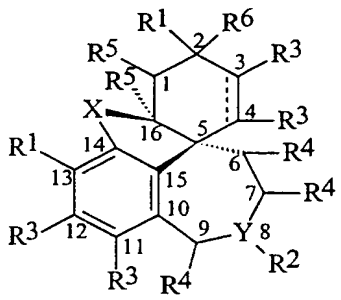
6. The use as claimed in any one of the preceding claims wherein the cholinesterase inhibitor is capable of crossing the blood brain barrier.

7. The use as claimed in any one of claims 1 to 4 wherein the cholinesterase inhibitor is slected from physostigmine, tacrine and tacrine analogues, fasiculin, metrifonate, heptyl-physostigmine, norpyridostigmine, norneostigmine, huperazine, donepezil and pro-drugs of any of these.

8. The use is claimed in any one of claims 1 to 6 wherein the cholinesterase inhibitor is selected from glantamine, epigalantamine and norgalantamine, and

analogues, salts and derivatives of any of these.

9. The use as claimed in any of the preceding claims wherein the cholinesterase inhibitor is selected from galantamine and its derivatives of formula (I):



wherein the broken line represents an optionally present double bond between carbon atoms 3 and 4, each R_1 is independently selected from hydrogen, hydroxyl, straight or branched chain alkyl, hydroxyalkyl, carboxyalkyl amino, alkylamino, acyl, lower alkanoyl, cyano, sulfhydryl, C_{1-6}alkoxy, alkylthio, aryloxy, arylthio, R_3-substituted aryloxy, R_3-substituted arylthio, aralkoxy, an optionally R_3-substituted aliphatic or aryl carbamyl group, aralkylthio, R_3-substituted aralkoxy, R_3-substituted aralkylthio, aryloxymethyl, R_3-substituted aryloxymethyl, alkanoyloxy, hydroxy-substituted alkanoyloxy, benzoyloxy, R_3-substituted benzoyloxy, aryloxycarbonyl and R_3-substituted aryloxycarbonyl,

R_2 is selected from hydrogen, straight or branched chain C_{1-6}alkyl, alkenyl or alkaryl group, optionally substituted by a halogen atom or a cycloalkyl, hydroxy, alkoxy, nitro, amino, aminoalkyl, acylamino, heteroaryl, heteroaryl-alkyl, aryl, arylalkyl, cyano, amyl, aroyl, cycloalkylmethyl, allyl, phenyl, R_3-substituted phenyl, alkylphenyl, R_3-substituted alkylphenyl, heterocyclyl selected from α- or β-furyl, α- or β-thienyl, thenyl,

pyridyl, pyrazinyl, and pyrimidyl, alkyl-heterocyclyl or R'-substituted heterocyclyl, where R' is alkyl or alkoxy,

each R_3 is independently selected from hydrogen, hydroxyl, sulfhydryl, alkyl, hydroxyalkyl, aryl, aralkyl, alkoxy, mercaptoalkyl, aryloxy, thiaryloxy, alkaryloxy, mercaptoalkaryl, nitro, amino, N-alkylamino, N-arylamino, N-alkarylamino, fluoro, chloro, bromo, iodo, and trifluoromethyl,

each R_4 is independently selected from hydrogen, halo, trifluoromethyl or C_{1-4}-alkyl,

each R_5 is independently selected from hydrogen or hydroxymethyl,

R_6 is hydrogen or C_{1-6}alkyl, or when R_1 at carbon atom 2 is hydroxyl, R_6 may be a moiety of formula I wherein R_6 is hydrogen and R_1 is a linking bond; or

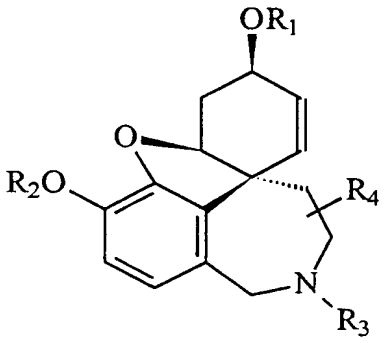
R_1 at carbon atom 2 and R_6 may jointly form semicarbazone,

X is oxygen or NR_3,

Y is nitrogen or phosphorus,

and methylenedioxy derivatives thereof and pharmaceutically acceptable acid addition salts thereof.

10. The use as claimed in any one of the preceding claims wherein the cholinesterase inhibitor is selected from compounds of formula II



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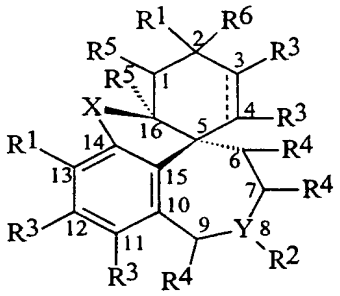
wherein R^1 and R^2 which may be the same or different

each represents a hydrogen atom or an acyl group, such as a lower alkanoyl group, e.g. an acetyl group or a straight-chained or branched alkyl group, e.g. methyl, ethyl, propyl, or isopropyl;

R^3 is a straight or branched chain alkyl, alkenyl or alkaryl group which is optionally substituted by a halogen atom or a cycloalkyl, hydroxy, alkoxy, nitro, amino, aminoalkyl, acylamino, heteroaryl, heteroarylalkyl, aroyl, aroylalkyl or cyano group; and R^4 represents a hydrogen or a halogen atom attached to at least one of the ring carbons of the tetracyclic skeleton, and pharmaceutically acceptable salts thereof, such as a hydrobromide, hydrochloride, methylsulphate or methiodide.

11. The use according to any one of the preceding claims where the cholinesterase inhibitor is galantamine or a salt thereof.

12. The use of galantamine or a derivative thereof of formula I:



wherein the broken line represents an optionally present double bond between carbon atoms 3 and 4, each R_1 is independently selected from hydrogen, hydroxyl, straight or branched chain alkyl, hydroxyalkyl, carboxyalkyl amino, alkylamino, acyl, lower alkanoyl, cyano,

sulfhydryl, C_{1-6}alkoxy, alkylthio, aryloxy, arylthio, R_3-substituted aryloxy, R_3-substituted arylthio, aralkoxy, an optionally R_3-substituted aliphatic or aryl carbamyl group, aralkylthio, R_3-substituted aralkoxy, R_3-substituted aralkylthio, aryloxymethyl, R_3-substituted aryloxymethyl, alkanoyloxy, hydroxy-substituted alkanoyloxy, benzoyloxy, R_3-substituted benzoyloxy, aryloxycarbonyl and R_3-substituted aryloxycarbonyl,

R_2 is selected from hydrogen, straight or branched chain C_{1-6}alkyl, alkenyl or alkaryl group, optionally substituted by a halogen atom or a cycloalkyl, hydroxy, alkoxy, nitro, amino, aminoalkyl, acylamino, heteroaryl, heteroaryl-alkyl, aryl, arylalkyl, cyano, amyl, aroyl, cycloalkylmethyl, allyl, phenyl, R_3-substituted phenyl, alkylphenyl, R_3-substituted alkylphenyl, heterocyclyl selected from α- or β-furyl, α- or β-thienyl, thenyl, pyridyl, pyrazinyl, and pyrimidyl, alkyl-heterocyclyl or R'-substituted heterocyclyl, where R' is alkyl or alkoxy,

each R_3 is independently selected from hydrogen, hydroxyl, sulfhydryl, alkyl, hydroxyalkyl, aryl, aralkyl, alkoxy, mercaptoalkyl, aryloxy, thiaryloxy, alkaryloxy, mercaptoalkaryl, nitro, amino, N-alkylamino, N-arylamino, N-alkarylamino, fluoro, chloro, bromo, iodo, and trifluoromethyl,

each R_4 is independently selected from hydrogen, halo, trifluoromethyl or C_{1-4}-alkyl,

each R_5 is independently selected from hydrogen or hydroxymethyl,

R_6 is hydrogen or C_{1-6}alkyl, or when R_1 at carbon atom 2 is hydroxyl, R_6 may be a moiety of formula I wherein R_6 is hydrogen and R_1 is a linking bond; or

R_1 at carbon atom 2 and R_6 may jointly form semicarbazone,

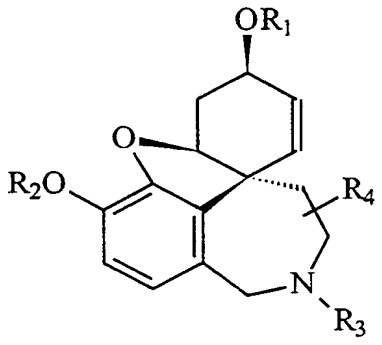
X is oxygen or NR_3,

Y is nitrogen or phosphorus,

and methylenedioxy derivatives thereof and

pharmaceutically acceptable acid addition salts thereof in the manufacture of a medicament for combatting attention deficit disorders.

13. The use of galantamine or a derivative thereof of formula II



II

wherein R^1 and R^2 which may be the same or different each represents a hydrogen atom or an acyl group, such as a lower alkanoyl group, e.g. an acetyl group or a straight-chained or branched alkyl group, e.g. methyl, ethyl, propyl, or isopropyl;

R^3 is a straight or branched chain alkyl, alkenyl or alkaryl group which is optionally substituted by a halogen atom or a cycloalkyl, hydroxy, alkoxy, nitro, amino, aminoalkyl, acylamino, heteroaryl, heteroarylalkyl, aroyl, aroylalkyl or cyano group; and

R^4 represents a hydrogen or a halogen atom attached to at least one of the ring carbons of the tetracyclic skeleton,

and pharmaceutically acceptable salts thereof, such as a hydrobromide, hydrochloride, methylsulphate or methiodide in the manufacture of a medicament for combatting attention deficit disorders.

14. The use of galantamine or a salt thereof in the

manufacture of a medicament for combatting attention deficit disorders.

15. A method of combatting attention deficit disorders comprising adinistering a pharmaceutically acceptable cholinesterase inhibitor or a pro-drug therefor.

16. A method as claimed in claim 15 wherein the disorder is as defined in claim 2 or claim 3.

17. A method as claimed in claim 15 or claim 16 wherein the cholinesterase inhibitor is as defined in any one of claims 4 to 14.